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GEOLOGICAL FIELD BOOK.

COLUMBIA UNIVERSITY.

E.O. Hovey,
American Museum
of Natural History,
New York City,
U.S.A.

Roll 44-1 - Ekblaw + Hunt in
cabin of Cluett 8 II. 16 Flash

44-2 Ekblaw + Hovey do

44-3-22. III. 16 Captain Pickels
feeding some dogs. P. S. B.

44-4-22. III. 16 Schooner
from the south

44-5- Tah-ti'ag and his
dogs beside the "Cluett" on his
arrival from the south 1/4/16

44-6 - Parker Snow Bay
Baulina + Evik 2/4/16

J.V. 12m - 1/2°
B

1
5 April, 1916. The "big gulch" two miles west of the schooner originated in the corrosion and erosion of a massive dike of diabase (?) which cuts the pink gneiss vertically and trends essentially N.-S. The dike is about 125 feet wide as exposed in the bay shore cliffs. Specs. 651 + 652 (dupl.) were taken about 25 feet from western contact. The basic dike is crossed at right angles by 4"-12" dike of light gray rock containing much biotite. Specs. 653, 654 (dupl.) + 655 (char.) contact with the diabase.

5 April. Spec. 656. Eskimo skull - gift of H.C. Pickels

15 April 1916. Height of Cairn Mt., being the peak on which Mr. Ekblaw and Captain Pickels built a cairn of rocks on or about 12 Feb-1916. It is the highest point within sight from the vessel and rises beside the big glacier ("Cluett", earlier "Comer" glacier) and between that and the double-ended glacier ("Comer", earlier "Cluett" glacier) on the south.

Dr. H. J. Hunt started from ship at 10:45 with my barometer ^{aneroid} reading +700 ft or 30.204 inches + thermom. + 1° and ship's aneroid reading 29.90" - See next page for table

15 April, 1916

3020.
27.75
2.45

Time	Ship's aneroid	Museum	Temp (ship)
10:45 A.M.	29.90" 801	700' ^{80 ft} (30.20") +1° 80 ft	
11:15	29.90	14. J. H.	
11:45	29.90	1600' 29.225 (12m) +3	
12:15	29.90		
12:45	29.92	3000' + 27.75 +6°	
1:15	29.92		
1:45	29.92		+7°
2:15	29.925		
2:45		750' 30.15	

This gives elevation as being 2300 feet above the sea. (0.225' as av. of up + down readings)
Top of glacier (if front as we see it pr. this) 900 feet
Advance guesses were

Captain Pickels	- 1200 ft
Dr. Hunt	1175
Mark Davis	1250
Norman	1500
Chief Cotton	1100
E.O. Hovey	2000

Dr. Hunt reports some E. wind on the summit. Very keen. Temperature seemed 5°, at least, colder than when he left ship.

20 April. Crag abreast of schooner.

I started about 2:15 p.m., clear, cloudless sky and moderate westerly breeze with temp. about $+12^{\circ}\text{F}$ for top of crag via big gully east of the igloo.

Aneroid reading 2:20 sea level	100'	<u>Sif</u>
3 p. - east knoll above igloo	825'	725'
3:15 p. - highest point of crag	885'	785'
4 p. - sea level	75	810'

Average of up + down 797.5'

\therefore call altitude 800 feet.

Ledges of gray banded gneiss are exposed in upper part of gully up which I went. Much hornblende. Squeezed band of highly serpentinized rock is evidently strongly metamorphosed dike. Red and pink loose fragments are not quartzite but weathered gneiss.

✓ 13 April. 46-1; 8-04 Pudtlak and Kashingwa packing kamatiks beside meat cairn near igloo.

✓ 46-2; 8-04 Pudtlak's igloo with himself and family standing at the entrance.

✓ 46-3; 8-02 Kashingwa starting from ice port

✓ 46-4; 8-02 Kashingwa and Pudtlak starting from ship at 12:40 p.m.

16 April - 46-5; 8-04 E.O.H. in full costume for walking in cold weather, when calm or moderately windy. Journal Greenland III, p. 101.

46-6; 8-04. E.O.H. in full costume for cold weather sledging. III, p. 101.

22 April - 47-1; 8-02 Ridges and furrows in surface of big ("Cluett") glacier at head of Parker Snow Bay. 900 ft. A.T. 12:45 p.m. Ridges are most probably result of wind action on winter snow, forming longitudinal drifts which have consolidated into ice. N.Y.

47-2; 8-04. Moat between glacier and eastern end of first mountain ridge on southern side of Cluett glacier. Produced by prevailing wind coming from mountain side during snow storms and snow drifting. Bottom of moat in its upper portion is about 1130 feet above sea by aneroid measurement.

24 April 47-3; 8-04 Kudluktu's kamatik and dogs about ready to start for Umanak with load of 8 bags exp. coal and case of milk. Fully 800 pounds. 17 dogs - 11:15 a.m. -

47-4; 8-04. Bird Cliff west of big gulch about two miles from schooner. Shows pinnacle, great sill of diabase in the gneiss, elevated sea-grotto about 60 feet above the bay.

47-5; 8-02. Grounded ice berg and its ice foot. North side bay about 1 mi. from ship. The ice foot shows pressure and movement.

25 April - 47-6; 8-02. Crew at work cutting ice away from about rudder -

26 April - Overland from bight (cache) near Cape Dudley Digges to mouth of big gulch. At and near cape rock is dark gray, hornblende gneiss strongly and intricately contorted. Many veins of quartz and of pink feldspar. Bight is northern end of small valley crossing the point and rather deeply incising it. Probably due to corrosion of basic dike, but now filled with mass of fractured rock from the adjoining walls of gneiss, particularly on the west. At crest there is quite an area of flattish grass and moss covered earth, which evidently is very fertile. Grass grows luxuriantly and the place is a great resort of rabbits (Lares). Noted large diabase dike on plateau trending about S.E. - N.W. Frost disintegration of rock

beautifully displayed everywhere of course -
down to fine earth. Fragments are
~~all or~~ mostly subangular to rounded.
Sharp angles only on masses recently
broken from the ledges. Saw no ev-
idences of quartzite, all boulders seemed
to be immediately local.

✓ May - Gx 16-1 - 4/35 Peter Frencher un-
braiding dog traces.

Gx 16-2 4/35 Peter Frencher as if ar-
riving from Cape York to - Pavb ngs.

✓ May Gx 16-3 4/35 Bird cliff north
side Parker Snow Bay to show great
sill. Cliff is about 900 ft high.
Country rock is of such dark red
and orange hues that it is somewhat
unlikely that the black sill will
be prominent in the photo.

Sill has some large boulders
of gneiss in it. What I took for
the last fall for the upper arm of
an inclined V-shaped sill intrusion
is either an older intrusion
or (more likely) the Horriblende
gneiss lying on the feldspathic
gneiss. The big diabase (?) sill cuts
into the Horriblende gneiss at

the angle of the V and separates it from an underlying projection of the feldspathic gneiss which contains in places heavy hornblende bands -

Spec ⁶⁵⁷ & dupl ⁶⁵⁸ of diabase from large fragment fallen from the sill

The sill disappears beneath the sea 25-30 yards west left of snow filled gully showing at left of photo

✓ Gx 16-4; 4/65 - Small rounded iceberg near Broken Rock point. Snow drift and moat on windward (S.E.) side -

West of Broken Rock Point a horizontal dike or sill of diabase 100± ft thick is exposed in the hornblende gneiss. Projection into gneiss shows irregularity of fissures. Much more altered than the big sill already mentioned

Hornblende gneiss continues to Cape Birdley Dicks. Its boundary with the feldspathic gneiss lies along top of Bird Cliff

Rocks loosened by heat will down cliff. Thunderously

Rock fragments on snow and ice
are sinking rapidly. They form little
pools about them. Picked a rock
out of its nest & had a refreshing
drink.

Yesterday dog dung was sunk
2-3 inches into the snow.

Heard birds - ptarmigan -
Bramblings I suppose

Many streamlets trickle down cliff

7 May -

✓ 9x16-5-4/75 Captain Pickels and crew of "Cluett"
(except Charlie & Ralph?)

✓ 9x16-6-4/75 Do with Charlie & Ralph

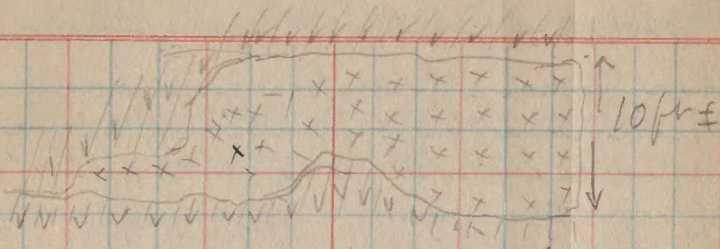
✓ 9x16-7-10 all 4/75 Men in groups of two each

7 - capt. & mate. 8 - Norman & chief 9 - Ben & Taylor 10 - Ralph & Muel ^{could}

✓ 9x16-11-12 - 4/75 Crew.

N.B. Promised copies to the men.

8 May - Extremely fine grained black
basic (diabase?) dike in the gray hornblende-
biotite gneiss at sea level about 1/2 mile
west of Biggish in the Bird Cliff.
Sends out stringers into the gneiss
which are rich or less in thickness and
pinch out.



659. Middle of six foot part of dike.
The whole dike is extremely fine grained

660 - Dupe of 659

661. Stringer in the gneiss, preserving both contacts.

662 - Dupe. of 661.

663. Stringer in gneiss, inclosing
sliver of gneiss in the diabase

664-667 Soapstone from 12-18"
zone of in schist talcose ^{micro}schist
in gneiss $\frac{1}{2}$ - $\frac{3}{4}$ mile east of
big gulch north side Parker
Snow (Chett) Bay. = $1\frac{1}{2}$ mi
from head of bay.

668. Biotite + Sphatite lenticule
from talcose schist at Eskimo
soapstone "quarry"

The Eskimo "quarry" from which

Pudlak and others have gotten soap-
stone from which to make lamp-
stoves and pots is about 20 feet
above sea level in the face of the
gneiss cliff about $1\frac{1}{2}$ mile from
the head of Parker Snow (Cluett)
Bay, north side. The belt of steatite
of fairly good quality is 12-18"

thick and trends $190-195^\circ$ mag-
netic (= $E 10^\circ-15^\circ S$) [but perhaps
variation is greater than 90° here or
some local cause affects compass,
for this reading seems to be too great
by twenty degrees] Dip $70-85^\circ N$.

Zone of serpentized or talcose biotite
schist is 6 to 10 or more feet wide
in hornblende-biotite gneiss. Out-
crop of the zone can be traced 200
yards or more in face of cliff, rising
toward east.

Spec. 69 - Pudlak's pyrite fire ball. Gift of Melrose Cotton

14 May. Gx 17-1 - Alakutziak (= Alacotiah)
beside his kamatik on wh. is lashed a kayak.

(Inuk)

17-2 - Missionary and wife loading their kamatik.
He is moving from Kiatak to the vicinity
of Cape York

17-
 Gx. 3. Sigdlu and Mere beside Kamatik

17-4 Egingwah & Sigdlu beside ^{latter's} ~~former's~~ Kamatik just before he started for Cape York.

16 May. ✓ Gx 17-5, 4/75 Lower (western) end of big (Cluett) glacier from top of large gneiss erratic about $3/4$ mi. distant. Shows ~~ice~~ vertical ice front flanked by the incurving ends of the two main lateral moraines

✓ 17-6 4/65 Vertical ice front of Cluett glacier from point on outwash about 200 yards away. Shows curved and overturned and folded ice-and-dirt bands at right and nearly straight bands in center of field. In lower one-third of the vertical face a band of dirt varying from 6" to 24" or 30" in thickness is prominent, the wash from it soiling the edges of the ~~de~~ adjacent ice layers. Debris consists of abundant fine gray sand and mud containing great numbers of boulders of gray and red gneiss. In the lower left hand corner of the view are three or four large blocks of ice-and-dirt which fell last winter from the vertical ice front. Stones constantly loosen and roll down from the thick layer of dirt making a great noise in the Arctic stillness which is

disturbed only by the purling of the stream
of water flowing from the glacier.

Many icicles should show in the photo,
but the beautiful screen composed of thousands
of them which characterized the face a
month ago has largely disappeared.

Gx 17.8 $\frac{4}{50}$ Close view (50 ft) of a part
of the ice front of the "Cluett" glacier showing
overturned folds and sigmoid flexures in
the layers composing the glacier.

Gx 17.9 $\frac{4}{50}$ B 10 $\frac{4}{35}$ Ooquiah, wife and
two children standing beside Erik's tupic
on the beach at the head of the bay.

17 May Gx 17.11 $\frac{4}{35}$ + 12 $\frac{4}{50}$ Aterengana
seated on her sleeping furs on the beach
sewing on some mittens.

Spec. 670. Aterengana's stone for rubbing
skins. It is a prismatic fragment of trap
rock, which she thought would interest
me on account of the marks in one end
which ^{she} compared to bundles of sinew.

25 May. Gx 18, 1-6 all $\frac{4}{25}$ Overcast sky + foggy -
✓ E.O.H. in full costume for cold weather walking,
when calm or moderately windy.

✓ 2. Do. using netshe hood à la Eskimos.

✓ 3. E.O.H. in full regalia for cold ^{rest or windy} weather kamatik riding as passenger, including caribou skin muffs and fox tail face protector. (Cf. Greenland Journal III p. 108.)

4. Failure

✓ 5. E.O.H. in sledging costume as worn usually by Eskimo, i.e. without outside kamikputes. (But I shld. have worn seal skin instead of bear skin mittens)

✓ 6. E.O.H. dressed as passenger for kamatik riding in ordinarily cold weather.

27 May. ✓ Two reels with the Sennemann motion picture camera of little auks flying, perching and billing and cooing like doves on the talus slope and cliff near the new coal cache about 200 yards from the "Cluett"

2 June. Spec. 671. Beach pebble of gneiss cut by basic dike. Pretty faulted. Head of Parker Snow Bay.

5 June - 18, 7 $\frac{1}{2}$ 5; 8, $\frac{1}{2}$ 50; 9, $\frac{1}{2}$ 50; 10, $\frac{3}{2}$ 25 Captain Pickels in his furs - 7+8, hood back; 9+10 hood on -

✓ 18-11 $\frac{1}{2}$ 35 Loading a cask of water on to the Cluett

✓ 18-12 $\frac{1}{2}$ 40 Head of bay and Cluett (northern) glacier from beside the vessel.

✓ 19-1 $\frac{1}{2}$ 35. 6-11. Loading water on to Cluett.

6.VI. Spec. 672. Beach pebble of augen gneiss from elevated beach at head of bay near igloo.

8.VI. 19-2 8/75 Parker Snow Bay looking W from "Cluett". Effects of a June snow storm

✓ 19-3 8/75 Do. looking E.N.E.

✓ 19-4 8/90 Do " S.W.

11.VI. Spec. 673. Basic dike (hornblende) in gneiss. Talus slope at Inugissok (Igffissok) Parker Snow Bay, Greenland

674. Do. To be cemented to 673

The amount of more or less schistose (i.e. very strongly sheared) augen gneiss in large and small blocks on the upper plateau is large. These seem to be erratics. Where is ledge?

✓
13.VI 9x 19-5 8/35 and 6 to 10 all 8/65. Bright sunlight about 2 p.m. EO It in pins, re-
peating 18-1-6 to secure better negs. 8=double ex
N.B. Chief Cotton snapped the camera & I
promised him a print of the full costume.

✓
14.VI. 9x 19-11 ~~112~~ 8/295 Little anks on talus slope above point where lumber was piled

✓ 19-12 $\frac{8}{295}$ Cliffs and little auks above same point.

✓ 20-1 $\frac{8}{90}$ Do.

✓ 20-2 $\frac{8}{90}$ Head of bay, *namatah* glacier. "Clust"
in foreground at right. Some little auks shld. show.
From cliff pinnacle ca 200 ft. above lumber point.

✓ 20-3 $\frac{8}{295}$ Little auks perched } Talus slope directly
✓ 20-4 $\frac{8}{295}$ Do. flying } abreast of the vessel.

✓ 16. VI. Gx. 20. 5-12 ~~all~~ $\frac{74}{50}$; 6, $\frac{8}{90}$; 7, $\frac{8}{75}$;
 $\frac{8}{100}$; 9, $\frac{8}{65}$; 10, $\frac{8}{65}$; 11, $\frac{8}{65}$; 12, $\frac{8}{65}$

Series of E.O. Hb. in fur costume. Taken
by chief because the preceding set were not sharp.
✓ 5-7 Netcha, seal skin mittens, bear skin pants, kamiks, cap
6-)

✓ 7 & 8 - Do. but wearing hood Eskimo style

✓ 9 - Kooltah (hood back) bear skin mittens, bear skin
pants, maulsaks, kamiks

✓ 10 - Do. (hood forward) seal skin mittens &c

✓ 11 - Do. bear skin mittens

✓ 12 - Kooltah, bear skin mittens, bear skin pants, ka-
mikpukks, muff & face protector. maulsaks

✓ 17. VI. Gx 21-1 & 2 $\frac{8}{100}$ Ben, Child & Charles
preparing little auks on deck for packing

NOY ✓
21-3 + 4 $\frac{w}{550}$, 5 + 6 $\frac{w}{1000}$ Flying little auks
17 + 8 } in gulch S of ship

✓ 675 - Beach pebble. Igfissok (Mugvisok)
Parker Snow Bay - Augu greiss
(Eskimo)

21. VI. 21. 9+10 - 8/15+30 sec. Cabin stove.

Spec. 676 & 677 Quartzite from ledge north side Cluett Glacier (the big one) about 2 mi. from schooner. The fragments were taken from loose blocks, but the ledge is there and shows dip of 30° to 35° N. (a guess). The quartzite overlies and perhaps is intercalated with a highly fissile mica or hydro mica schist. It also overlies the gneisses.

24 June. Temp in shadow of meat rack at Pond 1 - later igloo at 12:40 p. 43° F [in sun 47°]
Barometer set sea level at 12:30

1:30 p.m. 22.5 ft up on face of cliff near side of first S. gully from igloo in my own shadow 42° In sun 44° to 50°
acc to whether the sun behind face or against same object

All up this far is gneiss - mostly feldspathic + mica occurs with bands of hornblende + biotite and strong veins of quartz

2:05 p. 350' A.T. in shade S. side gully 40°
Gneiss is very schistose here. Contains epidotized bands + quartz lenses.
Dips always N. 35° - 40° . Slope covered with shale
At 450' sericitized quartzite (?) con-
formable dip Spec 678

(150-200 yds distant)

17

Next northern knoll, overlapping the last of course, is a banded rock but a phase of a quartzite with much mica in it. 679
Climbed 30-40 yds here + then collected.

Sp. 680 - Micaceous quartzite?; contains small faulted dikes. 575' A.T.

If these be really quartzite the Huronian is to be colored in to the top of this cliff east of igloo at any rate. Underlain by gneiss.

Loose blocks of unquestionable quartzite lie on top of the eastern knoll (forming west side of gulch) at brow of cliff 700' A.T. I would swing gully westward along brow + then bounding northward near head of gully directly above Puddle's igloo ^{or at any rate around} the high point in which cairn was built ~~at the top~~ which seems to be of gneiss. 3:30 p.m. Base of cairn 760' A.T. Cairn measures 7'3" high on east side.

28 June. Climbed shallow gully and face of cliff 200-300 yds east of Puddle's igloo and found Huronian quartzite and schists forming upper 200 feet of the bluff.

Is there a fault between this knoll and the cairn cliff, traversing and causing the larger gully directly above the igloo?

North Star Bay (19

1-12 8/90

✓ 22- Tringa canutus nest, clutch
[22.2+11
beaks] + young - taken by W. E. Skblaw

8/90.
23-1-7 Tringa canutus by W. E. S.
(1+2 beaks)

✓ 14.VII 8-10 8/25 Tringa Baiodhi young.
posed by W. E. S. near home
at North Star Bay, taken by both

✓ 14.VII 11-8/75 C.L. Exped. quarters at
North Star Bay East

✓ 12 8/65 Beach embankment form-
ed of shingles by pressure from ice
foot. Rasmussen's station "Thule"
in the background East

M.B. 23-7+8 may be transposed
on acct of some uncertainty in handling -

15-VII. 24-1+2 Dog caught by tide

15-VII. 24-1 8/75 C.L. House (Hendrick's)
at Thule

✓ 15.VII 24-3. 8/25 Habitat of snow bunting.
7 h.m.

✓ 24-4 8/25 11 p.m. Umanak Butte fr. m. house.

✓ 16.VII. 24-5 8/75 Umanak Butte fr. m. house 10 a.m.

✓ 6- 8/35 Snow bunting habitat, general.

✓ 7 8/50 Do. with bird itself on rock

✓ 8 8/25 Entrance to snow bunting's nest (6 ft)

✓ 9 8/25 " " " " (6 ft)

✓ 10 8/20 " " " " (4 ft)

24 ✓

17.VII 11-8/10 Entrance to snow-bunting
nest, with male about to feed the young

✓ 25-1, 2, 3

24-12, ~~13, 14, 15~~ all 8/10 Young snow bunt-
ings in the nest

25-4-8/10 Banding a young snow bunting #12,219.

25-5-8/10 Eider duck nest - with three
eggs: Islet near the Eskimo tupies.

25-6-8/20 Do.

25-7-8/30 Umanak Butte from the islet
to show buttresses of Huronian beds under
the diabase cap.

25-8-8/10 Tern's nest on islet

18.VII 25-9 8/25 Astrup's monument from
N.E., near river

25-10-8/50 Do fr S.E. more distant river

25-11 8/65 Thule Station headquarters
Peter Freuchen on piazza

25-12 8/65 Lange Koch, W.E. Ekblom
+ dogs in front of Thule house.

19.VII By W.S.S. ✓ 26.1 Nest of Oldsquaw
near view

-26.2 Do. but further off.

✓26.3 Young Lapland longspur.

✓26.4 Nest & eggs of loon - near view

✓26.5 Site of nest of loon

✓26.6 Do. at right angles to no 5

✓26.7 Knot of two young.

✓26.8 Do

✓26.9 Wind blown silt in stream valley.

✓26.10 Cassiope association on
glacial dune.

✓26.11 8/35 Naviana, Alna²loongwa¹
and Inuk³ beside house.

✓26.12 8/65 Do. but lighter struck.

N.B. The girls were just starting to
climb the Umanak, Naviana carry-
ing her 9-day old baby in her hood.
Later They did not go up the butte.

all ands but varying times of exp.

8/65

20.VII. 27-1. Group of igloos at Umanak,
North Star Bay. Roostenholme Sound.

27-2 8/50 One of the igloos at Umanak, A.S.B.
(Egingwaq + Alualoovunga's)

27-3 8/50 Excavation in refuse heap near
old igloo Umanak, A.S.B.

27-4 8/50 Two old Eskimo graves at Umanak, A.S.B.

27-5 8/25 Near view of clump of poppies
on shingle flats, North Star Bay.

27-6 8/50 Turpics at Umanak, A.S.B. - 5.45 p.m.

27-7 8/35 Pond and turpics at Umanak,
A.S.B., with patches of cotton grass
(Eriophorum Scheuchzeri) in foreground.

27-8 8/35 Inuasok^{to} washing a netscha in a
pond at Umanak, A.S.B. 6 p.m.

27-9 8/35 Inuasok^{to} and Alualoovunga¹
(Harrigan's) + South Greenland child standing in front of
Egingwa Badu's Turpic. 6 p.m.

EWIK'S +

21.VII. 27-10 8/35 Patches of Eriophorum Scheuch-
zeri with pond + turpics in background 10a.
Looking N.W. - Umanak

27-11 8/50 General view of pond near
South side

tupies at Umanak, looking S.W., to show three plant zones on border: Eriophorum Schenckii on bank, Ranunculus hyperboreus floating on the water and Hippuris vulgaris submerged with tops of stalks showing.

✓ 27.12 16/10 Eriophorum Schenckii, close view of a small clump.

Spec. 681 Diabase from the large surface of ledge rock exposed near our house.

See p. 26

✓ 31.11 - 28-1 (graphic) 6⁴/₅ Quadrant of hippies near igloos at Umanak.

✓ 28-2 8⁸/₂₅ - Do

✓ 28-3 6⁴/₅ Looking N.S.W. from Umanak - Edge of Umanak Butte, Northholme Is.; Saunders Is with 3 igloos in foreground (Dalrymple Pt) Early's Inukitoks & another.

✓ 28-4 3²/₅ Quadrant of Ranunculus near igloos Umanak

✓ 28-5 8⁸/₂₅ Do

✓ 28-6 3²/₅ Diabase boulder on ledge at Umanak - split by frost?

✓ 28-7 $3\frac{2}{5}$ Pond at Umanak to show
Pleuropogon Sabinei, looking N. 2

✓ 28-8 $12\frac{2}{5}$ Do in attempt to get the
background of Norkenholme Sound
Rasmussen Glacier straight.

✓ VIII. 28-9 $3\frac{2}{5}$ (Overcast) Our sleeping tent

✓ 28-10 $3\frac{2}{5}$ Frost-split boulder ()

3. VIII 28-11 + 12 W.A. 32. Time } N.S.B. looking W.

✓ 29-1 DO. } + including whole bay

✓ 29-2 W.A. 32. Time. North Star Bay looking
S.W. including P. Frenchen's house
but not quite all of the bay.

✓ 29-3 - $6\frac{1}{2}$ " $3\frac{2}{5}$ } Panorama N.S.B. $\frac{1}{2}$ "

✓ 29-4 " " } " " $3\frac{1}{2}$ "

Be sure to send K. Rasmussen prints
from these photos. of N.S.B. free from
ice. Also send him one of the W.A. negs.

Soil flow is well shown all over the
sloping plain east and S.W. of Frenchen's
house and the "earth glaciers" vary in
height at their lower ends from 1 to 4 feet.
The latter, which reach the edge of the bay,
are 50 to 100 feet long. Stream trench-
ing is here with raised banks or dikes
well developed as a result of frost action

- (6. ~~VIII~~ [✓] 28.10. $3\frac{1}{5}$ Umanak. ^{NSB} Frost split block
 of quartzite on the plain.
- ✓ 29.5 $3\frac{1}{5}$ Umanak. ^{NSB} Frost split block
 of slaty rock (diabase?) on the plain
- ✓ 29.6 $3\frac{1}{5}$ Umanak. ^{NSB} Tilted stones and
 raised dike like side (down hill side)
 of furrow formed over subsoil
 drainage channel.
- ✓ 29.7 $\frac{8}{25}$ Thule view from in front of our
 house, west half North Star Bay 7 p.m.
- ✓ 29.8 $\frac{8}{25}$ Do. east half
- ✓ 29.9 $\frac{4}{25}$ 8 p. Umanak. Flitch of narwhal
 meat drying on diabase cliff near
 igloos. Taken from canoe.
- ✓ 29.10 $\frac{8}{25}$ 8 p.m. Umanak. Igloos from
 off shore in canoe. Erik + Pauline
 are standing in front of one. Shows
 G.C.'s diggings at the left.
- ✓ 7. ~~VIII~~ - 29.11. $\frac{6}{5}$ Umanak Rock (diabase)
 shore near igloos to show rounding
 effect of frost action below high tide
 mark.
- ✓ 29.12 $\frac{6}{5}$ Do 30 yds N of preceding.

29. ~~VIII~~ (Written 7. ~~VIII~~) Went with Ek across the plain and part way up the Umanak. He called my attention to the dike-like embankments along one side - usually, if not always, the downhill side - of the furrows running over the subsoil drainage lines. Probably connected with freezing and thawing above the ice table. The subsoil drainage seems to follow cracks produced by shrinkage at and below the level of the ice table. Flat stones stand on edge and usually are arranged lengthwise of the furrows. Phenomenon of the unequal removal of under soil.

Spec 682 + 683 are slabs of Huronian shale showing fossil mud cracks.

Spec 684 ~~Katobite(?)~~ Aragonite (!) filling of crevice in the Huronian. Much of this material is scattered in fragments over talus slopes and plain.

8 August. Visited top of Umanak Butte with Ekblaw, Dr. Hunt accompanying us to the base of the vertical, 60 foot cliff formed by the edge of the diabase cap of the butte. Buttresses of Huronian

slates, shales and quartzite at about 550 ft. above the sea (aneroid). These dip gently toward the west or south of west, and this is the highest exposure of them in the hill, ^{their} upper limit above the slope topping the butresses and at the lower contact with the diabase being about 600 feet above tide. Where we scaled the cliff the diabase sill is about 60 feet thick. This seems to be its thinnest part. The upper surface of the plateau is roughly oval in outline, with its longer diameter running approximately E.-W. for about 300 meters. The surface of the plateau is gently undulating in contour and its highest part is about 710 feet above the sea. Its general slope is slightly toward the W.S.W. The sill of diabase thickens toward the west and ^{is} not less than 100 feet ^{thick} at the western end of the butte, where the diabase rests on massive butresses of the sedimentaries. The effects of chemical weathering and mechanical disintegration are prominent in every direction, - oxidation with and without hydration, flaking and rounding of corners and edges, polygonal cracking on vertical as well as horizontal surfaces, sand and gravel, "desert varnish", carving by wind and wind blown sand (and snow?) Induration of the surface rock is particularly shown along

crevices. In many places on the plateau these crevices are marked by a wall 2 to 4 inches wide and 1 to 2 or even 3 inches high, extending in straight or nearly straight lines for several or many yards.

Ek's photos. - Exposure 2 + 3 $\frac{8}{100}$ A pillar of disintegrating rock shaped like the bust of a woman.

Exp 4 $\frac{1}{50}$ Escarpment at western end of the Umanak.

Spec. 685. Fine-grained diabase from ^{very} near ^{contact at} base of escarpment eastern end of Umanak Butte showing development of magnetite crystals by fumarole action along crevice. 600' A.T.

Spec. 686. Diabase from about 2 feet from ~~base~~ contact at base of escarpment eastern end of Umanak Butte. One face shows groups of small pyrite xls and epidote (?) on old fissure surface. 600' A.T.

Spec. 687 Diabase from about 2 ft. from contact at base of escarpment eastern end of Umanak Butte. Duplicate 600' A.T.

Spec. 688 Diabase. Coarse grained. Eastern end Umanak Butte. 600' A.T.
Lower part of sill

11.VIII. 30-1 $\frac{8}{65}$ Umanak. View up (N.E.)
Wostenholme Sound to show ice &

bergs in the fjord. Eggvigwak's + Eggvig
wah badiis topics in foreground.

30.2⁸/₆₅ Umanak. Looking W or NW.
across Wostenholme Sound to show
bergs. Nehutislasoki (Pangauts) tri-
pic + pond with Floripugon in
foreground.

11.VIII. 1916. Went with Ekblaw to cliffs
of Huronian sedimentaries forming
south side of North Star Bay and
at about one-half mile from head of
bay collected Specs. 689, 690, 691
of the aragonite (?) and calcite and
aragonite (?) bands intercalated
with the shales. In the two specs.
(690 + 691) wh. show calcite, that
is above the aragonite in position.
There are many of these bands in
a zone not less than 15 or 20 feet thick
and they extend for long distances
with much regularity of thickness,
though all are thin. As shown in
these specimens the bands $1\frac{1}{2}$ - 2"
thick contain partings of shale.
None that I saw exposed here showed
clear aragonite (?) as thick as
spec. 684 from loose fragments on
the Umanak Butte.

12. III Qc. 30.3 $\frac{8}{25}$ ✓ North Star Bay from
point near house. Very cloudy.

13. VIII - 30.4 $\frac{8}{30}$ ✓ Knud Rasmussen standing
beside his house at Thule, North Star Bay.

30.5+6 ✓ $\frac{8}{50}$ The Eskimo dog "Saint Peter"

25 Aug. Went to head of Mostenholme Sound
in the motorboat "Niger Lis". Moltke
Glacier (fide Rasmussen) has advanced
greatly in past three years. Judging from
point which he pointed indicated
as its front in 1913, I should think
the advance to be ~~more~~ more than a mile.

Low promontory near head of
fjord, southside, is gray gneiss.
Fine old stone igloo - all stone even
in roof, no wood. Last occupied
by Esk. in winter 1907-8 (or 06-07?)

15. VIII. Qc. 32.1 $\frac{40}{50}$ (26X) ✓ Fitzclarence's Rock,
Booth Sound, from N.W. at 8¹⁵ p.m.

Basalt cap on sedimentaries - a cy-
linder standing on a regular cone.

16. VIII
Qc. 32.2 $\frac{4}{50}$ ✓ Narsak. Ca 9 a.m. - Three
Eskimos in kayaks - Kuslutook (= Kood-look-
to of Peary + MacMillan) Kakatiale and
Iminak (son of Kolutingmak).

- (Artup)
- 32-3 $\frac{4}{50}$ ✓ Karsak. Inruak in kayak.
- 32-4 $\frac{8}{100}$ ✓ Karsak valley and small pied-
mont glacier east of it. From the N.
on the moving "Inger Lis"
- 32-5 $\frac{8}{100}$ ✓ Northumberland Island from
the S.E. From moving "Inger Lis".
- 32-6 $\frac{8}{100}$ ✓ Eastern part of southern coast
of Herbert Island from S.W. From "Inger Lis".
- 32-7 $\frac{8}{50}$ ✓ Uluksset, Herbert Island. Western
part of settlement of 11 tupics.
- 32-8 $\frac{8}{50}$ ✓ Do. Eastern part.
- 32-11 $\frac{8}{25}$ ✓ ~~Uluksset~~ Uluksset. Ariangooneq
(Ananik's sister, Tungviki's wife) laying
out pair of kamiks for Captain Comer
to be made
- 32-12 $\frac{8}{25}$ ✓ Uluksset. Group of women
and children in front of tupic. Ivaluk
with small baby.
- 33-1 $\frac{8}{25}$ ✓ Uluksset. Igloos in process
of construction. Front view
- 33-2 $\frac{8}{25}$ ✓ Do. Interior.

two-family

33.3 $\frac{9}{25}$ ⁰ Ulupset. Large igloo in process
of construction - Tongviki + Ivaluk

25. VIII - See p. 30.

29. VIII Eider Duck Island - Gray feld-
spathic gneiss inclosing rounded masses
of hornblende gneiss. Excellent example
of an igneous gneiss carrying magmatic
inclusions of an older gneiss which have
been rounded by resorption. Highest
point of the island is 60-75 feet above
the sea. This and other points have been
rounded and smoothed by the grinding
action of the sea ice and many other
smoothed surfaces indicate abrasion
by the ice. The gneiss is intersected by many
veins of pegmatite. These consist mainly
of feldspar and some are strong - 1 to 2 ft
across.

Dalrymple Rock. Landed on the eastern
side. Strongly contorted gneiss of different
aspect from that of Eider Duck Island. Pre-
dominantly a gray feldspathic gneiss
with numerous great veins of coarse peg-
matite consisting principally of feldspar.
The feldspar pegmatite breaks down
under the action of the frost more rap-
idly than the gneissic country rock,
shallow trenches being formed thus.

Saw one string of magmatic inclusion of hornblende gneiss showing resorption edges. Three of four of the included masses formed the series. Surface of Dalrymple Rock is very jagged and broken, but the points up to at least 60 feet above the sea (as high as we climbed - on a side knoll) have been somewhat smoothed and rounded by ice action.

30 August - Western (or S.W.) point of Saunders Is. "Kond's Harbor" Cliffs are remarkable for their verticality. Go down sheer into the water. Collected specimens of the purplish pink rock which on near view looks more like limestone than it does like the quartzite or sandstone that I have supposed it to be. Is easily scratched with knife blade. Dark gray is shale. Light gray seems more like an impure limestone or calcareous shale - specimens -

11 September - Solid orcuttifer see p. 43 (no 900)

15 September - Etah. Collected ctenophores in front of house and am trying to preserve them. Got two species of Calli-
ana or a related genus one ^(common) with contract-
ed top and tentacles six or eight times as long as the body, the other with more expanded top and much shorter ~~than~~ tentacles. Bodies $1 - 1\frac{1}{4}$ " across.

At least two species of Beroë. One looks like a rose-pink muskmelon of all sizes up to about three inches in diam. as it floats in the bay. Seen usually to float with infundibulum up and mouth down. Lying in the tray, the shape is that of a cucumber and the largest specimens obtained measure $4\frac{1}{2}$, $4\frac{3}{4}$, 5 inches long and $1\frac{3}{8}$ - $1\frac{3}{4}$ inches across. Infundibular end is rounded, oral end somewhat contracted so that the mouth is not bell shaped as in figure of Beroë forskalii of p. 211 of Textbook of Zool. vol. I. Parker & Haswell. Common. Another form, represented by one specimen, is smoke brown in color, broader in proportion to length, when compared with preceding, and mouth is more expanded.

collected one specimen of a large (7± inches) ~~Beroë (?)~~ cucumber-shaped form which was perfectly colorless except for a dark brown lump at the infundibular end of the mass. This was more delicate than the other forms and was torn to pieces in transportation and transferal with inadequate tools.

These rose pink Beroë's are strongly phosphorescent. "Akpiasuah"

Another common coelenterate is a bell shaped animal $1-1\frac{1}{4}$ " high by ~~1~~ $\frac{1}{2}-\frac{3}{4}$ " across. Flaring mouth with fringe. Animal is very active, swimming by contracting the body and forcing water out through the mouth. Delicate burnt orange color in body and darker in fringe. Also lots of "anik", a little pteropod (?)

17-Sept. Saw but four jellyfish today - two *Callianira* and two sun-ell *Bersé*

18 Sept. Got two medium sized (3" long) *Bersé* today - Saw no more.

18 Sept. ^{strata by} Ripple marked sandstone and quartzite Cape gneiss, beginning about 5700 feet above the sea. Seem to have northerly dip. Strong green layer is much epidotized or chloritized, though the color suggests copper stain. Prob. chlorite.

Just above this is a zone of cherty material in an impure limestone [That is, the rock has weathered away from the chert and is readily scratched with a knife but it does not effervesce under strong HNO_3 . We have no HCl] Differential weathering pronounced and some of the lumps look like masses of *Stromatopora* Specimens 692 + 693.

Above Provision Point and from 100' to 150' above the sea there is a considerable area of gneiss which shows the characteristic rounding, smoothing and grooving which are due to glacial action. Motion was from north-east-parallel or nearly so to axis of fjord. Surface is now covered with black lichens, but the striation is perfectly visible.

21 Sept. Went along ^{north} ~~south~~ shore of fjord for about a mile east of headquarters.

The great pile of gravel and boulders near the foot of which the house stands looks like an accumulation of torrent debris and presents three elevated strand lines or beaches above the sea. Surface is mostly rounded and smoothed boulders some of which are 3 feet in diameter. Pink feldspathic gneiss predominates, but there are many boulders of black hornblende gneiss mingled with them. This delta fan is about a half mile broad at sea level. Mac thinks it is a glacial moraine on account of the boulders on top, but I think that the fine material has been washed out leaving the boulders. I have not yet observed

ed stratification in the walls of the great gully cut by the present stream. This gully shows the big boulders on the surface of its bottom and has raised borders. Considerable water comes down here in the summer season.

About a half mile east of the house we encounter the massive gneiss forming the shore for a half mile, more or less. This is a pink feldspathic rock containing many bands of hornblende gneiss, the latter being intersected by countless veins of coarse feldspar and quartz, feldspar predominating. Projecting points are rounded and have been smoothed by ice action. Perhaps this can be correlated with the glacially smoothed and striated surface on Provision Point (see p. 36).

22 Sept. Advancing up the fjord the hornblende gneiss increases in proportion and seems to be the only or predominating rock from $1\frac{1}{2}$ miles.

23 Sept. Lx. 30.7 $8\frac{1}{2}$ ✓ Glacially rounded boss of gneiss above Provision Point. About 100 ft. above the sea. Looking ca N.

23. IX. Pr 30.8 ^{8/25} ① Glacially rounded, smoothed
and striated area, of gneiss beyond and a-
bove Provision Point. 100 ft. ± above sea
Looking ca N. by S.

30.9 8/25 ✓ Glacial grooves. Same region.
Near view Looking S.W.

30.10 8/25 ✓ Same as 30.8

30.11 8/25 ✓ Glacially rounded surfaces
of gneiss above next point west of Provision
Point. Dark hornblende gneiss.

30.12 8/25 ✓ Front of valley flow (solifluction?)
of gravel and boulders. Near view.
Solifluction? Half mile west of Provision Point.

31.1 8/25 ✓ Near view of small very smooth
surface of gneiss which, like others in the
vicinity, has been protected in some way
(probably by a filling of gravel) from too much
frost action. Point west of Provision Point

31.2 8/25 ✓ Headquarters and the gravel-boulder
bank behind it, showing three elevated
beaches above the house beach. From
ledge above Provision Point.

25 Sept. Climbed with Mac to top of Thermometer Hill, forming western extremity of the northern side of Foulke Fjord. My aneroid gave elevation 1025 ft., his 1000. On his ascent a week ago he got a reading of 1050 ft. Thermometer wh. he left there a week ago gave min. 8.9° max 34°

The cap of the hill is a bed of diabase 30 to 40 feet thick. Specimens No. 694 & 695 duplicate 696 was taken from bed of much decomposed diabase(?) lying below the cap and perhaps separated from it by a bed or beds of quartzite.

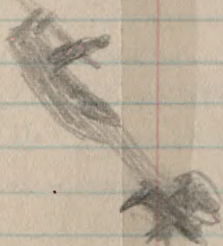
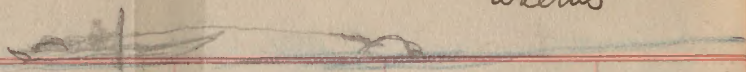
Upper portions of Thermometer Hill show gravel + boulder streams or flows (solifluction) in exceptional development. 50-100 feet below summit on western side there is a well marked flow of this kind which seems to be 150-200 yds long and 20-40 yds wide, descending ~~east~~ southward. The rock illustrated by spec. 696 disintegrates into bullet-like gravel scattered through ferruginous yellowish brown sand and this mixture flows down hill like a stream or glacier.

The level portion of the hill 850-900 feet above sea is a regular quicksand or quagmire mixture of clayey matter + quartz bits -

Kayak &
walrus

Kanaitischaring bear and cat

Kahda fecit



4 October. 9x 31.3. $\frac{8}{35}$ Looking out toward mouth of fjord from near house.

9x 31-4 $\frac{8}{35}$ ✓ Cove in front of house. Low tide showing cakes of ice on partly destroyed ice foot.

7 October - Spec. 697. Quartzite pebble from terrace near house - Shows worn burrows(?). (and rounded)

20 Oct - Starr Island is well grooved glacially.

25 October. Mac, Jot and I with the help of Itukashu and Nuncarpiingwah set a line of stakes across Brother John's glacier, about one-third mile from lower end - Perhaps 500 ft above the sea. Mac used theodolite and considered line to be normal to the axis of fjord and glacier. Stakes are ordinary inch gas pipe about 3'6" long and are sunk in auger holes 14 or 15 inches deep. There are 14 of the stakes and the intervening spaces measure from 50 to 100 yards in length. Outer stakes are on brink of steep sides of the glacier bordering the side valleys. All are set in the tops of hummocks of solid ice. The surface of the glacier is extremely hummocky, there being

scarcely any level surfaces to be seen -
There is a large river channel near the
west northern border of the glacier which
is the bed of a considerable stream dur-
ing the summer. Hard walking on
the summer ice without creepers, but
we got along fairly well when we kept
the bottoms of our kamiks free from
snow. I tried some hob-nailed wading
moccasins that had been brought up with
the idea that they would be useful in pro-
tecting kamiks on rock work, but they
were of little use.

Captain Comer determined the ice
to be $23\frac{1}{2}$ inches thick and the water
about 12 feet deep at a distance of
50-75 feet from the front of the glacier -
Largest trout (salmon trout) caught to date
measures 2' 3" long & weighs $5\frac{3}{4}$ lbs. It was
caught by Ahminah.

Ice cracked frequently under some
pressure - probably both from the glacier
and inflow of water. To be investigated.

Kahda caught a little trout that seemed
to have much larger fins proportionately
than the other fish.

Spec. 698

26 October. Thawed out, wrapped in
in cheese cloth and placed in
75% alcohol in a 5 gal milk can

the trout caught yesterday by Kahda and four salmon trout brought back by the Eskimos from their fall caribou hunt. These were caught in a small uncharted lake a short distance inland from Advance Bay, Greenland, in lat. $79^{\circ}8' N.$, just south of Humboldt Glacier. The fins have become somewhat damaged during transportation in a frozen condition, but these fish come from the most northern locality thus far reported in Greenland itself and they are preserved for identification.

25 October. Spec. 699. Foetus taken from wound of seal killed through the ice of Bancroft Bay, Greenland, on 15 October, 1916, by Akputishao. Placed in 10% formaldehyde. Transferred to 75% alcohol on 31 October.

Spec. 700. Decapod (squid or cuttle fish) collected by Accommodingwah on the beach at head of Foulke Fjord on 11 (or 10?) September and brought in by Panikpa. Placed first in 50% alcohol, later strengthened to 80% alcohol in which it now is. N. B. Full information given on 1 Nov by Neaupingwah (A's son) who says these are common.

Spec. 701. Beroë, Callianassa & see pp.
33-35 of this book

5 Feb., 1917 - Radcliffe Island - i.e. the first and largest of the three islands forming south side of entrance to the fjord - is of hornblende gneiss containing many granitic veins. Much gravel mixed with small pebbles occurs on the island. The exposed rock ledges are well grooved and striated glacially. Movement of ice apparently from northeast. The proportion of rock exposed is less than on Starr Island. More gravel.

9 Feb. Visited Brother John's Glacier. Ice of lake proves some advance of northern portion of glacier during the winter. Ten to thirty feet in front of the glacier a ridge of lake ice has been raised roughly parallel to the front of the glacier. Where largest this ridge is approximately ten feet high, with sides sloping at 45° . This would indicate a crude estimate of 8 feet of forward motion in the past 100 days, or about 1 in. per day. The ice is broken at the top of the arch. It rose from the surface of the lake and left an open space. Roof is perhaps 15 inches thick. Mac tells me

that Le and Ekblaw entered the open
 arch or grotto thus formed in 1915. They
 could stand upright in it. Four could
 easily have stood there then. He took photos.

Note on Perret camera - Speed 6
 seems to be about the same as
 speed 4 of Graflex \therefore aperture 4 cm
 speed 6 of Perret gives ca $1/25$ sec. exposure
 $712\frac{1}{2} = \text{ca } 11.5 \cdot 10$; $(716 = 16)$; $18 = 20$; $(20 = 24)$;
 $725 = \text{ca } 11.5 \cdot 39$; $(32 = 64)$; $36 = 84$; $(128 = 45)$
 $750 = \text{ca } 11.5 \cdot 160$.

The plate exposures of $12\frac{1}{2}/4/6 (= 10/25)$ on
 Parker Snow Point and of $18/4/6 (= 20/25)$ on
 Ekblaw Glacier near there on 11.IX.1915 gave
 very good results. We were only three or four
 miles distant (perhaps less) when these views
 were taken. Film exposures of same
 diaphragms and times on more distant
 mountains and ice masses a month
 previously were too great.

approximate table (compared with graflex)

	1 cm	2 cm	4 cm
lens 6	$1/95$	$1/75$	$1/25$
" 9	$1/295$	$1/90$	$1/35$

7 March Visited Brother John's glacier. Visited line of stakes but could not be sure from unaided eye observation that there has been any movement. A stake in the middle of the southern half of the line is or seems to be farther west than the others, but this may be due to original setting.

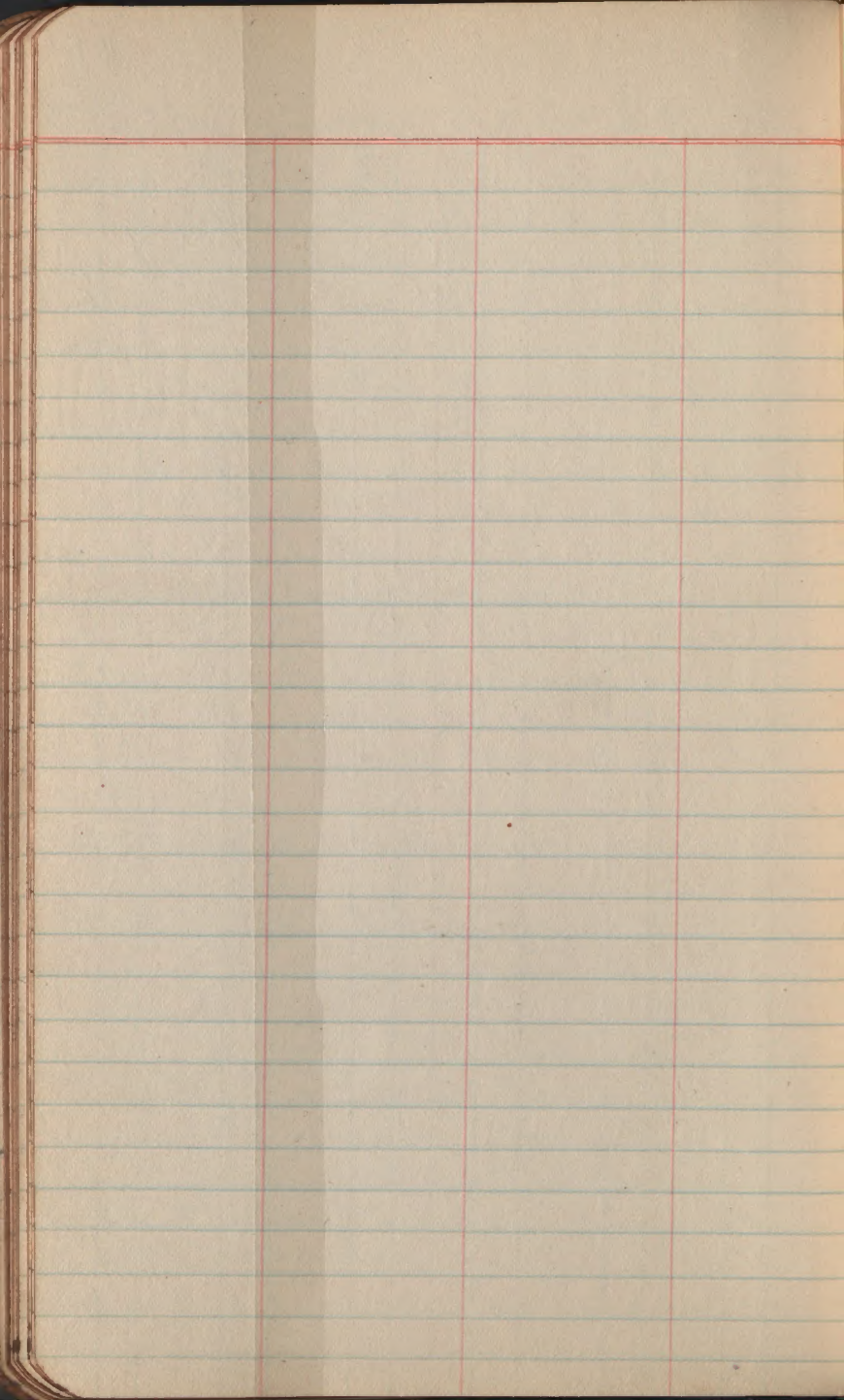
At the lake a second ridge has risen south of that noted on p. 44. This is larger, longer and higher, the crest being 15 feet above level of lake ice in its highest part. The stoss (glacier) side of the ridge shows beautifully the direction from which the pressure came, being flexed back at top to and beyond the vertical. On the distal side of the ridge the ice has been ~~beast~~ down below the general level of the lake surface forming an open hollow 1.5-2 ft deep. A similar hollow was formed on the proximal side of the ridge, but water got in and it is now full of new ice. This ridge extends from the north to or beyond the middle of the front of the glacier. Apparently, it is the result of movement which has taken place within the last four weeks, amounting to at least 10 feet horizontally. Relations are approximately as represented in the following section —

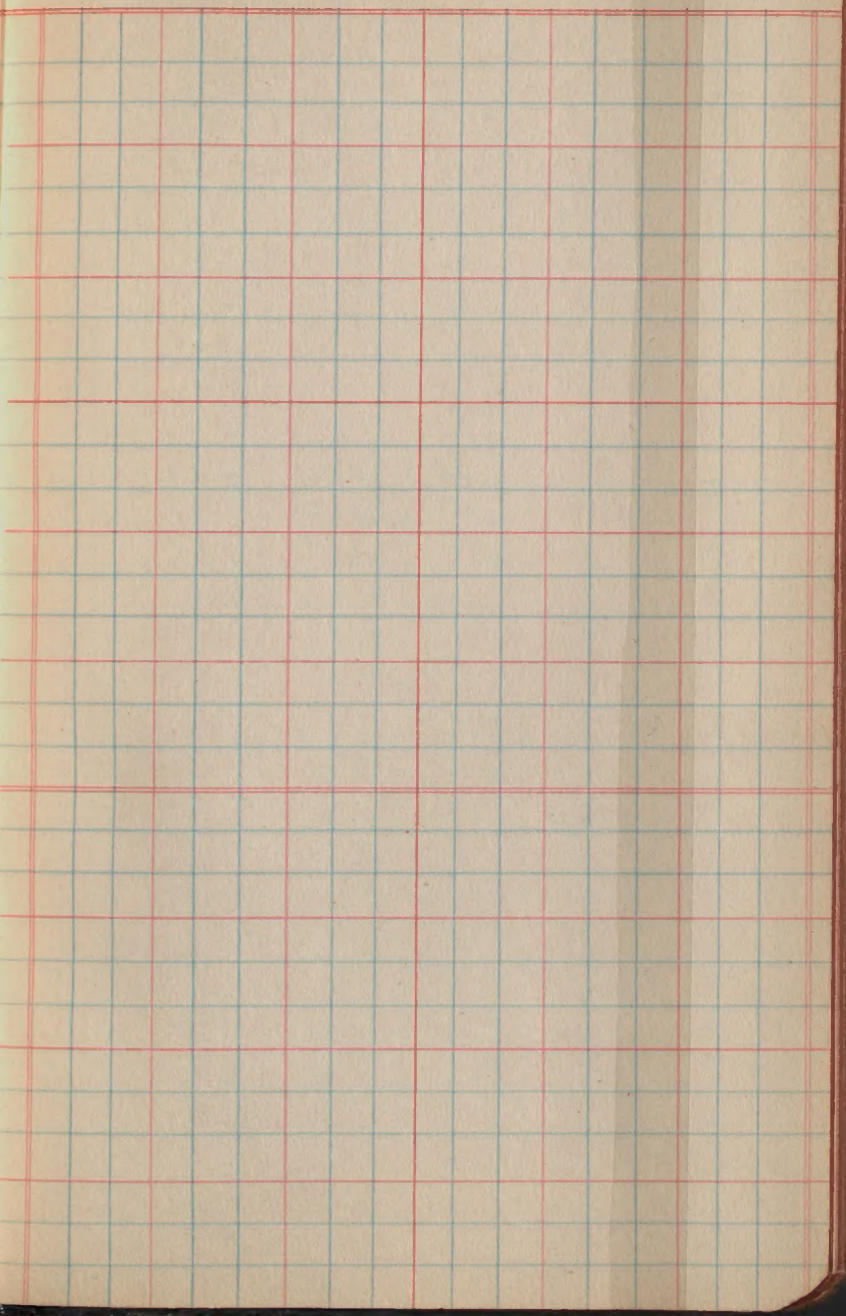
Lake
W

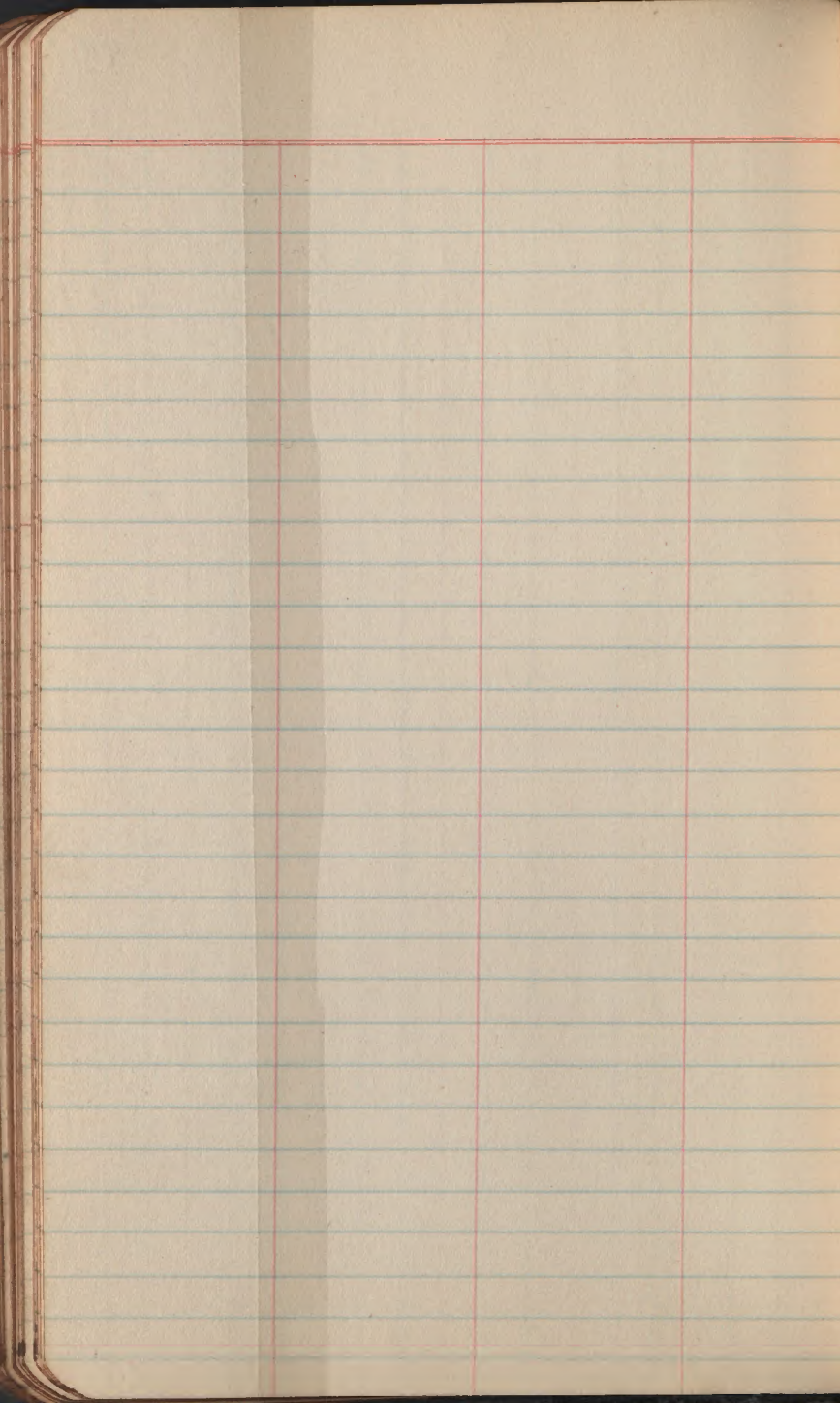
← 50' →

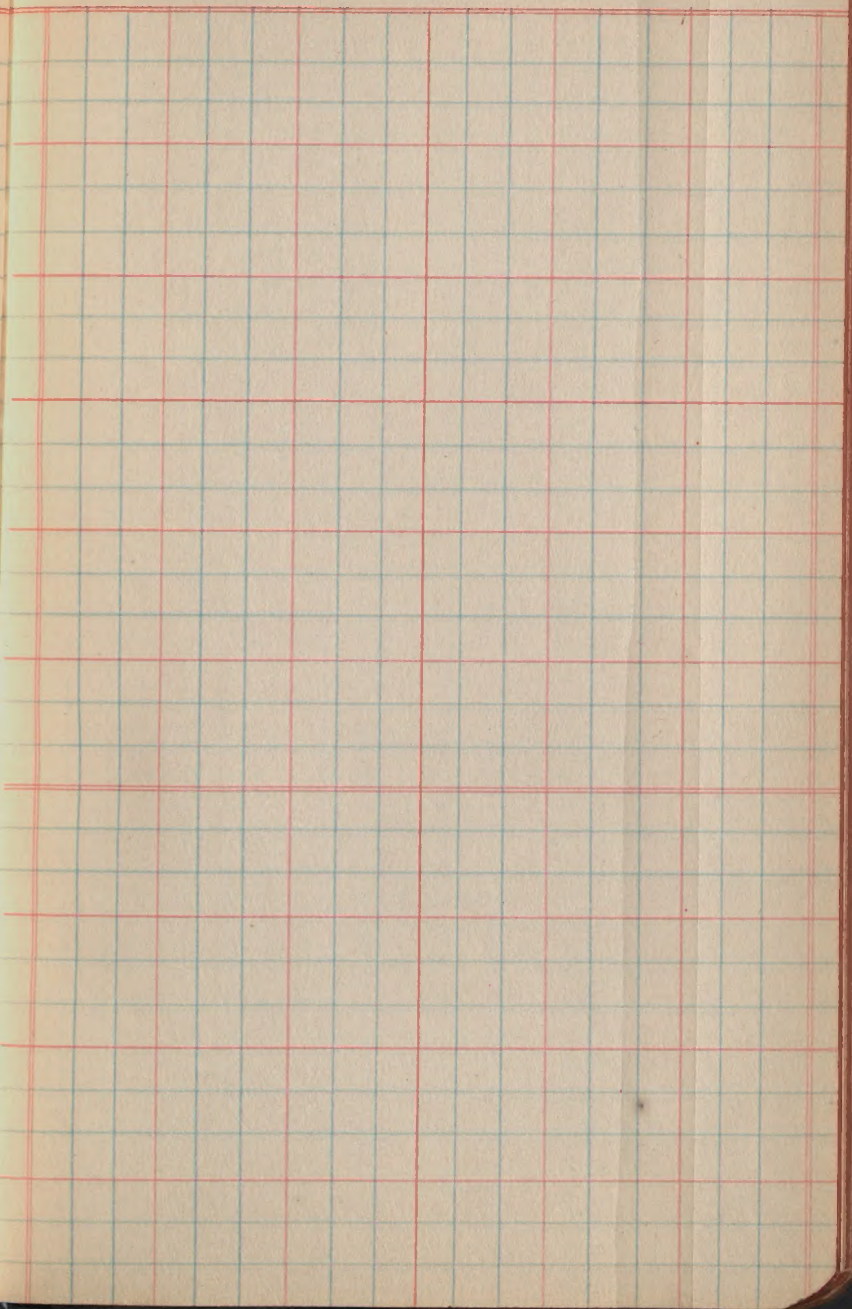
Glacier

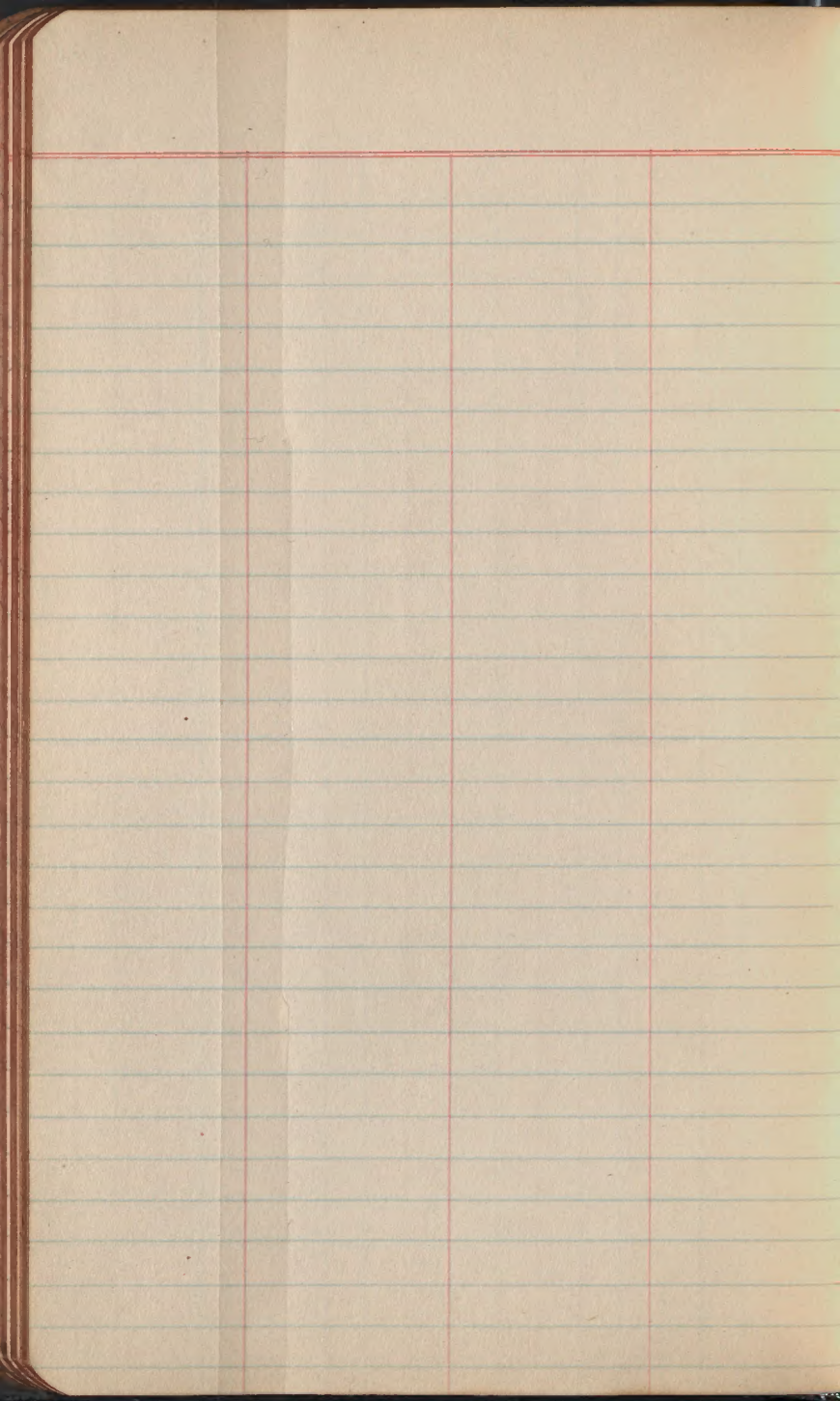
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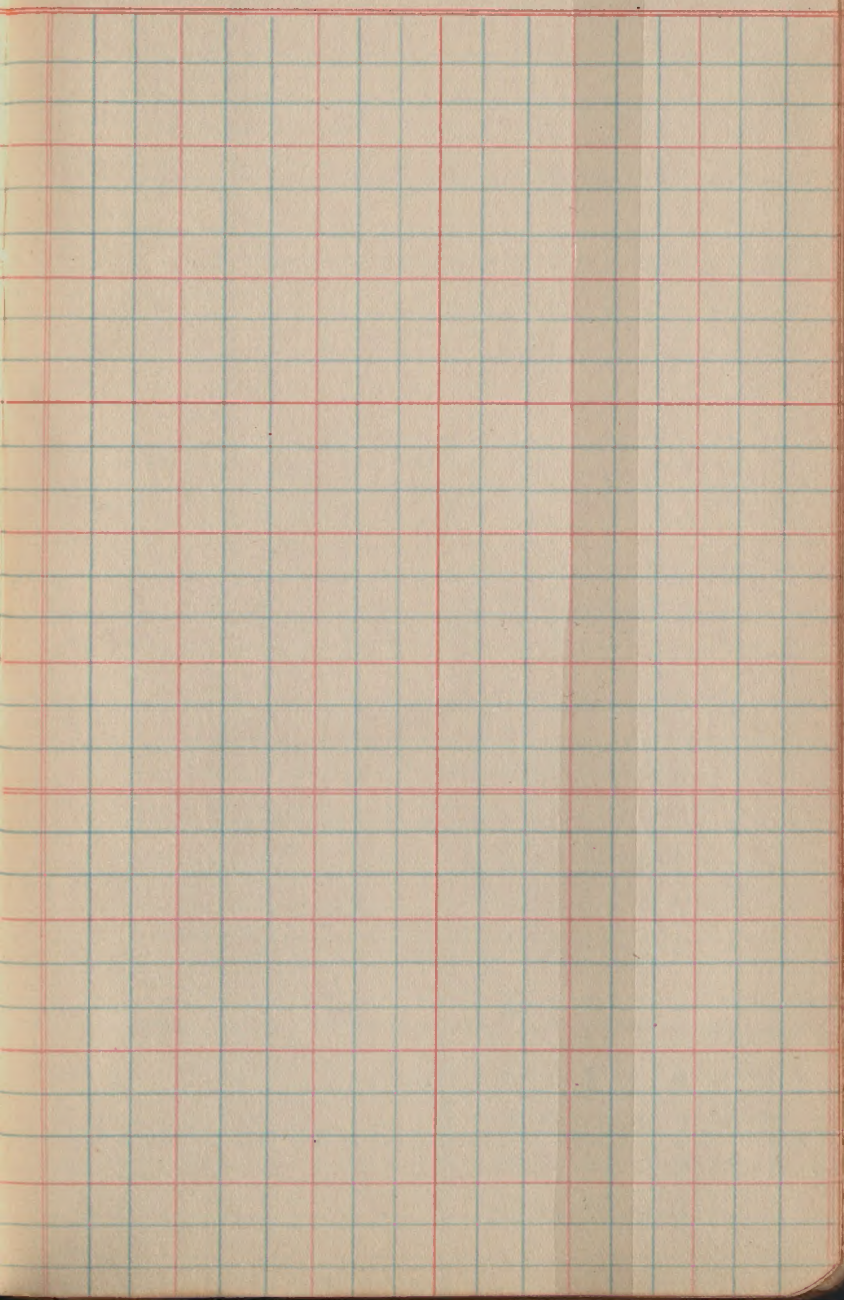


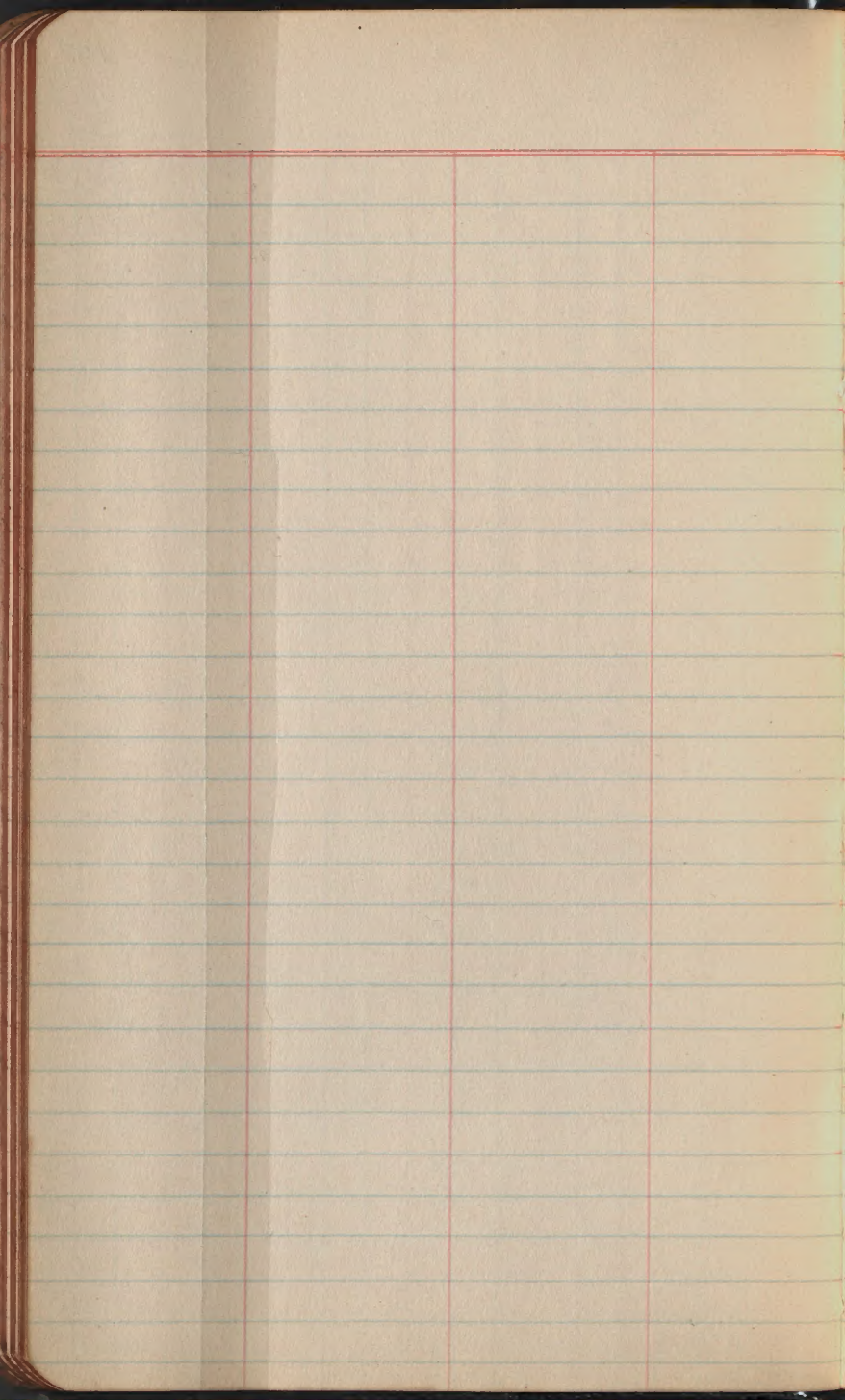




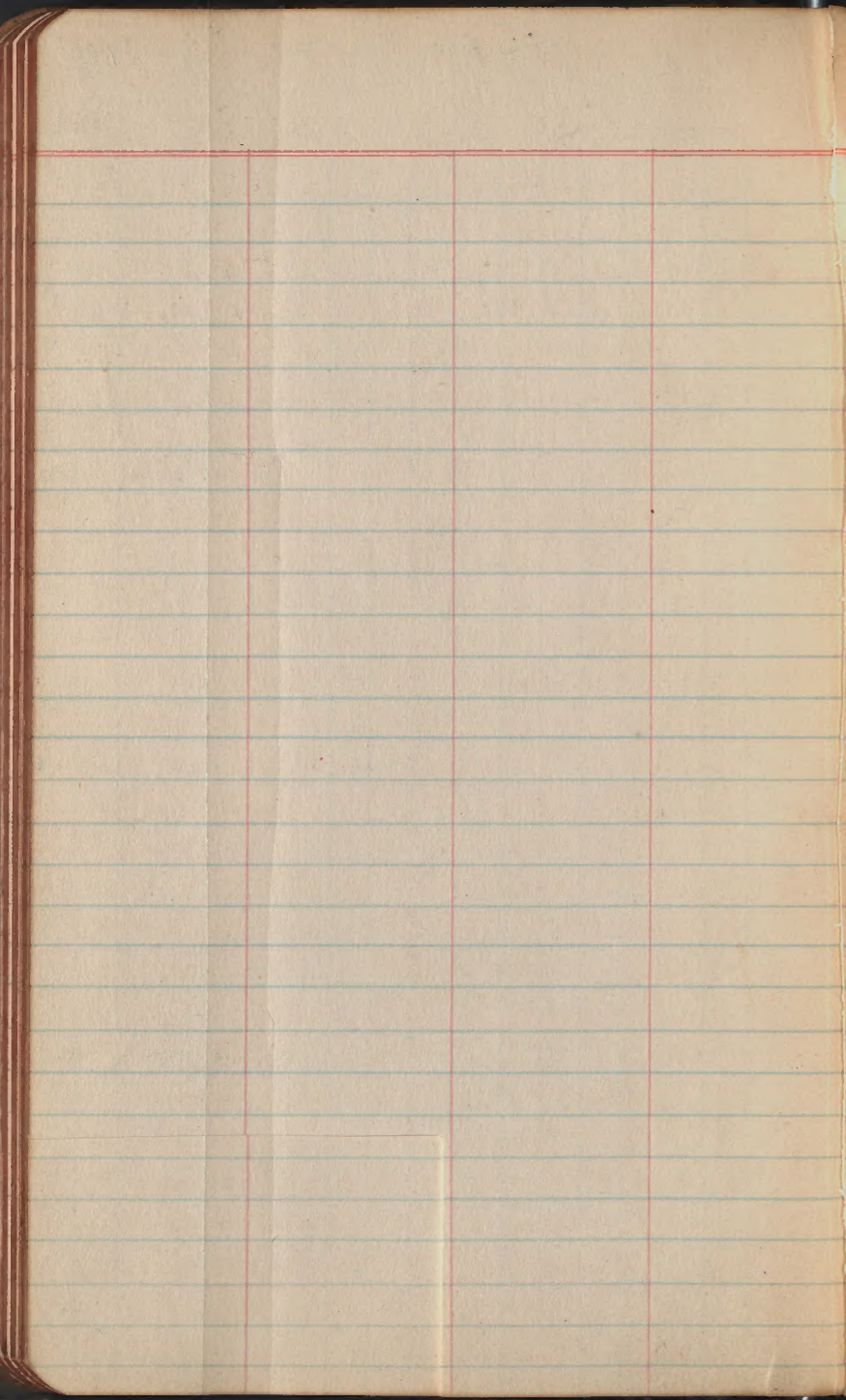








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13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30	31		



1916

111

January

S	M	T	W	T	F	S
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16	17	18	19	20	21	22
23	24	25	26	27	28	29
30	31					

April

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23	24	25	26	27	28	29
30						

February

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13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29				

May

			1	2	3	4	5	6
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14	15	16	17	18	19	20		
21	22	23	24	25	26	27		
28	29	30	31					

March

			1	2	3	4
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26	27	28	29	30	31	

June

				1	2	3
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18	19	20	21	22	23	24
25	26	27	28	29	30	

July

						1
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16	17	18	19	20	21	22
23	24	25	26	27	28	29
30	31					

August

			1	2	3	4	5
6	7	8	9	10	11	12	
13	14	15	16	17	18	19	
20	21	22	23	24	25	26	
27	28	29	30	31			

Courses across Melville Bay
(H.C. Pickels)

Cape York to Cape Seddon

True E by S $\frac{1}{2}$ S = 107° True

	geogr. mi.		statute mi.
Magnetic	1 st 20 miles	197°	$22\frac{1}{2}$
	2 ^d 20 "	$195^\circ 30'$	$22\frac{1}{2}$
	3 ^d 20 "	194°	$22\frac{1}{2}$
	4 th 20 "	193°	$22\frac{1}{2}$
	5 th 20 "	192°	$22\frac{1}{2}$
	6 th 20 "	191°	$22\frac{1}{2}$
Last	10 "	190°	$11\frac{1}{4}$

Dist. C. Y. - C. S. 130 geogr. = 150 statute mi.

Cape Melville to Cape Seddon

True S.E. by E. $\frac{3}{4}$ E True = 116°

	geogr. mi.		Statute mi.
Magnetic	1 st 20 mi.	206°	$22\frac{1}{2}$
	2 ^d 20 "	$204^\circ 30'$	$22\frac{1}{2}$
	3 ^d 20 "	203°	$22\frac{1}{2}$
	4 th 20 "	202°	$22\frac{1}{2}$
	5 th 20 "	201°	$22\frac{1}{2}$
Last	5 "	200°	6

Dist. C. M. - C. S. 105 geogr. = 121 statute mi

Courses across Melville Bay - H.C.P.

Cape York to Cape Seddon.

True = 107° = E. by S. $\frac{1}{2}$ S.

Magnetic

1st 40 mi. 197° = 45+ statute mi.

2^d 40 mi 194° 45+ " "

3^d 40 mi 192° 45+ " "

Last 10 mi 190° 11+ " "

Dist. C. Y. to C. S. 130 (150) miles.

Cape Melville to Cape Seddon.

True = 116° = S. E. by E. $\frac{3}{4}$ E.

Magnetic

1st 20 mi. 206° = 23 statute mi.

2nd 40 mi 203° 45+ " "

3^d 40 mi 201° 45+ " "

Last 5 mi 200° 6 " "

Dist. C. M. to C. S. 105 (121) miles.

Note. The record of the daily runs of the "Cluett" from her position off Devil's Thumb around to Cape Melville totals 128 miles.

That from off Thom Island to off Cape Melville totals only 54 miles

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